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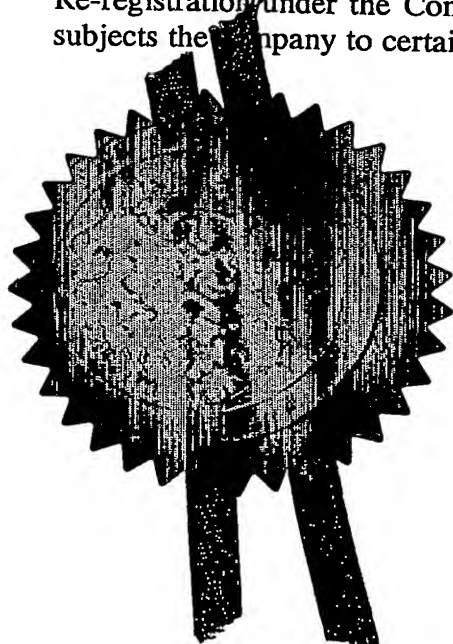
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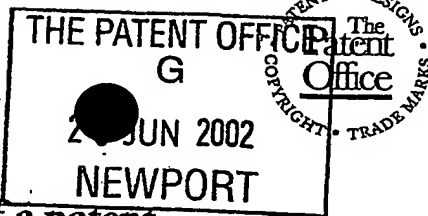
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*Stephen Hordley*

Dated 25 July 2003



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2. Patent application number

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3. Full name, address and postcode of the or of each applicant (underline all surnames)

[see continuation sheet]

Patents ADP number (if you know it)

If the applicant is a corporate body, give the country/state of its incorporation

4. Title of the invention

HAND-SQUEEZABLE DISPENSERS

5. Name of your agent (if you have one)

GRAHAM F COLES

"Address for service" in the United Kingdom to which all correspondence should be sent (including the postcode)

GRAHAM COLES & CO  
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BEACONSFIELD  
BUCKINGHAMSHIRE  
HP9 1SZ

Patents ADP number (if you know it)

4361556001

6. If you are declaring priority from one or more earlier patent applications, give the country and the date of filing of the or of each of these earlier applications and (if you know it) the or each application number

Country

Priority application number  
(if you know it)

Date of filing  
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7. If this application is divided or otherwise derived from an earlier UK application, give the number and the filing date of the earlier application

Number of earlier application

Date of filing  
(day / month / year)

8. Is a statement of inventorship and of right to grant of a patent required in support of this request? (Answer 'Yes' if:

- a) any applicant named in part 3 is not an inventor, or
  - b) there is an inventor who is not named as an applicant, or
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**Patents Form 1/77**

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Continuation sheets of this form

Description 8

Claim(s)

Abstract

Drawing(s) 6 + 6 1/6

10. If you are also filing any of the following, state how many against each item.

Priority documents

Translations of priority documents

Statement of inventorship and right to grant of a patent (Patents Form 7/77)

Request for preliminary examination and search (Patents Form 9/77)

Request for substantive examination (Patents Form 10/77)

Any other documents (please specify)

11. I/We request the grant of a patent on the basis of this application

Signature

Date 19-06-0

12. Name and daytime telephone number of person to contact in the United Kingdom

GRAHAM F COLES 01494 677181

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Item 3. Full name, address and postcode of each applicant

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6735385001

ADP No

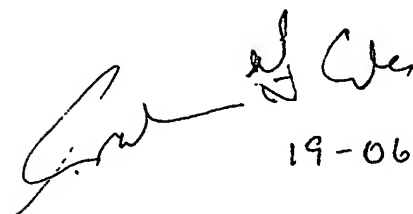
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8408080001

  
19-06-02

## Hand-Squeezable Dispensers

This invention relates to hand-squeezable dispensers.

5 Hand-squeezable dispensers are widely used especially for dispensing viscous or semi-viscous liquids, such as shampoos and detergents, but are also used for dispensing powders or other particulates, as well as free-flowing liquids. Such dispensers commonly take the form of a  
10 resiliently-squeezable bottle or other container of blow-moulded plastics material, that is discarded when empty. Since the bottle or other container is often specially configured for aesthetic and tactile appeal, it may represent a significant proportion of the overall cost of  
15 the product, so that economic and material wastage is involved together with environmental issues in its disposal. Although in some instances, provision is made for re-filling the bottle or other container this is normally from another plastics container that is  
20 discarded after use, so that wastage and environmental issues still to some extent remain.

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It is one object of the present invention to provide a form of hand-squeezable dispenser by which economic and  
25 material wastage and problem of environmental disposal, can be reduced.

According to one aspect of the present invention there is provided a hand-squeezable dispenser comprising a  
30 container for liquid or other material to be dispensed, the container being compressible for dispensing the liquid or other material therefrom, and a holder for at least partially enclosing the container, wherein the holder has a resiliently-biased part for compressing the  
35 container from its uncompressed condition when the holder is squeezed by hand against the action of the resilient bias, and wherein said part is engaged with the container.

such that when the squeezing is relaxed the container returns towards its uncompressed condition under the action of the resilient bias.

5 With the dispenser of the invention it is unnecessary for the container to have any inherent resilience for its return towards the uncompressed condition following squeezing. Accordingly, it may be of material (for example, paper or card, or metal-foil or plastics-film)  
10 that is relatively inexpensive and readily bio-degradable so that the economic and other disadvantages of using resilient plastics can be avoided. Furthermore, the aesthetic and tactile appeal desired, can be more cost-effectively invested in the re-useable holder rather than  
15 in the disposable bottle- or other container-dispenser of the prior art.

The container of the dispenser of the invention may have an external pocket or other means into which said part of  
20 the holder extends to engage the container as aforesaid. The said part may be one of two resiliently-biased limbs ~~which extend either side of the container for bearing on~~  
opposed wall-parts of the container when the holder is squeezed by hand, and which are engaged within the pocket  
25 or other means (individual or common to the two limbs) for returning the container towards its uncompressed  
~~condition when the squeezing is relaxed.~~

According to another aspect of the invention there is  
30 provided a holder for at least partially enclosing a compressible container of liquid or other dispensable material, to form a hand-squeezable dispenser, wherein the holder has a resiliently-biased part which is hand-squeezable onto the container against the resilient bias,  
35 for compressing the container from its uncompressed condition, and which is engageable with the container for returning the container towards its uncompressed

condition under the action of the resilient bias when the squeezing is relaxed.

5 A squeezable dispenser in accordance with the invention will now be described, by way of example, with reference to the accompanying drawings, in which:

10 Figure 1 is a perspective view of the hand-squeezable dispenser of the present invention;

Figures 2 is a perspective view of a container of viscous or semi-viscous liquid, forming part of the hand-squeezable dispenser of Figure 1;

15 Figure 3 is illustrative of the folded construction of the container of Figure 2;

20 Figure 4 is a perspective view of a frame or holder for receiving the container of Figure 2, in the assembled hand-squeezable dispenser of Figure 1;

---

Figure 5 is illustrative in partly broken-away form, of a lower part of one of two limbs of the holder of Figure 4;

25 Figures 6 and 7 are perspective views illustrating successive stages of assembly of the hand-squeezable dispenser of Figure 1.

30 Referring to Figure 1, the hand-squeezable dispenser is for dispensing a viscous or semi-viscous liquid such as a detergent, and consists of a rectangular compressible container 1 holding the liquid, and a moulded-plastics frame or holder 2 having an inverted-U configuration, for partially enclosing the container 1.

35

The container 1, which is illustrated in Figures 2 and 3, is of a folded-paper or -card box-construction having an

internal wax-coating or liquid-proof membrane for retaining the liquid to be dispensed; where a membrane is used it may be of plastics- or metal-film bonded as a backing to the paper or card. The folding, as

5 illustrated more especially in Figure 3, defines the top and bottom walls 3 and 4 of the container 1 as extending from upper and lower circumferential double-fold sections 5 and 6 respectively, that both overlap the front and back walls 7 and 8 and the two side walls 9 and 10 of the

10 container 1. Bonds are formed (by glue or otherwise) within both folds of the section 5 so that a firm, circumferential shoulder 11 is established at the upper end of the container 1. No such bonds are formed within the folds of the section 6 (or at least within the inner

15 fold) so that an upwardly-open circumferential pocket 12 is established at the lower end. A ring 13 that defines an outlet for the liquid is inset centrally into the top wall 3; the outlet remains closed by a membrane seal 14 that extends across the ring 13, until the container 1 is

20 activated for use within the holder 2.

Referring now also to Figure 4, the holder 2 has two flat-plate limbs 20 and 21 that splay out resiliently from an interconnecting top-section 22; the limb 20 is

25 longer than the limb 21 by virtue of an extra, bottom ~~blade-section 23 of reduced thickness.~~ The top-section 22 has a transverse cap or lid 24 which is hinged resiliently to the limb 21 and is held open by a finger

30 25 that projects from a retracted slide 26 mounted on the inside of the limb 21.

As illustrated in Figure 5, the slide 26 is coupled to a horizontal cross-bar 27 on the outside of the limb 21, by two pins 28 that extend through respective vertical slots

35 29 in the limb 21. With the cross-bar 27 in the position shown in Figures 4 and 5, the pins 28 are at the tops of their slots 29 for retraction of the slide 26 and with

the finger 25 obstructing closing of the lid 24. By moving the bar 27 downwardly to take the pins 28 to the bottoms of their slots 29, the slide 26 is extended to project from the bottom of the limb 21 as illustrated in chain-dotted line in Figure 5, and the finger 25 is withdrawn from obstructing the lid 24.

Assembly of the dispenser is carried out by placing the holder 2 with its limbs 20 and 21 straddling the upper end of the container 1 and extending down alongside the front and back walls 7 and 8 respectively. The holder 2 is angled to insert the blade-section 23 of the limb 20 in the pocket 12 on the wall 7. It is then pushed down fully to bring the top-section 22 flat onto the top wall 3 of the container 1 and a ridge-projection 30 on the inside of the limb 20, under the shoulder 11 of the front container-wall 7. This brings about the intermediate state of assembly of the dispenser, illustrated in Figure 6, in which the limb 21 remains splayed out resiliently from the back wall 8 of the container 1.

---

In order to complete the assembly of the dispenser, the limb 21 is pushed in towards the back wall 8 and held there by hand, to bring a ridge-projection 31 on the inside of the limb 21 under the shoulder 11 of the wall 8. With the limb 21 held in this condition, the bar 27 is pushed down to extend the slide 26 into the pocket 12 on that wall. This allows the hand-hold on the limb 21 to be released, and withdraws the finger 25 from obstructing closing of the lid 24, so as to bring about the fully-assembled state of the dispenser, illustrated in Figure 7. In this state, the engagement of the blade-section 23 and the extended slide 26 within the pocket 12, and the projections 30 and 31 under the shoulder 11, retains the container 1 front and back, firmly within, and as one with, the holder 2. A detent (not shown) is active resiliently between the slide 26 and the limb 21

to restrain the slide 26 in its extended condition and thereby maintain retention of the container 1 within the holder 2.

5 In order to activate the dispenser from the state illustrated in Figure 7, ready for dispensing liquid, the lid 24 is closed down onto the top wall 3 of the container 1; the resilience of its hinging gives the lid 24 a snap action in opening and closing. Closing of the  
10 lid 24 brings a sealing cap 32 on the underside of the lid 24 down hard onto the ring 13. A piercing tube 33 of the cap 32 pierces the seal 14, but the cap 32 fits closely onto the ring 13 so that the container 1 remains sealed while the lid 24 is closed.

15 Liquid within the container 1 is dispensed by first snapping the lid 24 open so as to unstop the outlet defined by the ring 13, and then squeezing the limbs 20 and 21 inwardly towards one another while the dispenser  
20 is held appropriately inverted. The squeezing of the limbs 20 and 21 inwardly towards one another, applies pressure to the walls 7 and 8 of the container 1 forcing liquid from within the container 1 through the outlet-ring 13. When sufficient liquid has been dispensed, the  
25 squeezing action is relaxed, allowing the limbs 20 and 21 to return under the resilient action of their hinging to the top-section 23.

30 The folded-paper or -card construction of the container 1 is such that until it is assembled with the holder 2, it keeps its rectangular form sufficiently to allow it to stand unsupported upright on its bottom wall 4, only while it is full and in its initial, sealed state. Once the seal 14 has been pierced and the container 1 squeezed  
35 to dispense liquid, the container 1 on its own tends to collapse, but when assembled with the holder 2 in accordance with the invention, is afforded rigidity and

is restored to the original rectangular form after squeezing. In the latter respect, the insertion of the blade-section 23 and extended slide 26 in the pocket 12, ensures that the walls 7 and 8 of the container 1 are  
5 pulled outwardly, to restore the container 1 to its original shape and to hold it so, as the limbs 20 and 21 move outwardly when the squeezing is relaxed. Once the container 1 has been restored to its original form, the lid 24 is closed, to seal the container 1, until the  
10 dispenser is required to be used again.

The dispenser can be used repeatedly in the manner described until the container 1 is empty. A refill container of the same construction and initially-sealed  
15 form as container 1, is then loaded in the holder 2 in place of the container 1. The empty container 1 is released from the holder 2 by first opening the lid 24, and retracting the slide 26 from the pocket 12 by lifting the bar 27 against the action of the restraining detent.  
20 Retraction of the slide 26 moves the finger 25 upwardly  
~~to preclude closing of the lid 24, and frees the limb 21~~  
to splay outwardly away from the back wall 8, returning the dispenser to the intermediate state illustrated in Figure 6. The splaying outwardly of the limb 21 releases  
25 the projection 31 from under the shoulder 12 so that the container 1 can be withdrawn from between the limbs 20 and 21, disengaging the projection 30 from the shoulder 11 and the blade-section 23 from the pocket 12.

30 The refill container, and any subsequent container used for refill purposes, is assembled with the holder 2 and used for dispensing, in the same way as the container 1 is assembled and used with it as described above. In each case, the container when loaded in the holder 2 is  
35 held firmly by engagement with it of the limbs 20 and 21, and after being squeezed to dispense liquid is returned by them to its original, uncompressed shape under the

resilience of their hinging. Moreover, the holder 2 affords support to the assembly, enabling the dispenser to stand upright on its bottom wall (the wall 4 of the container 1).

5

Although the container 1 of the dispenser described above, is constructed by folding paper or card, this is not necessarily so, and engagement between the holder 2 and the container 1 may be other than by engagement of the limbs 20 and 21 in a pocket; for example the limbs 20 and 21 may engage under strap elements attached (by glue or otherwise) to the walls 7 and 8 respectively.

10

Furthermore, although the dispenser is described in the context of dispensing viscous or semi-viscous liquid, it may be used for dispensing free-flowing liquid (for example, milk), powder (for example, talcum powder) or particulates (for example, granular salt).

15

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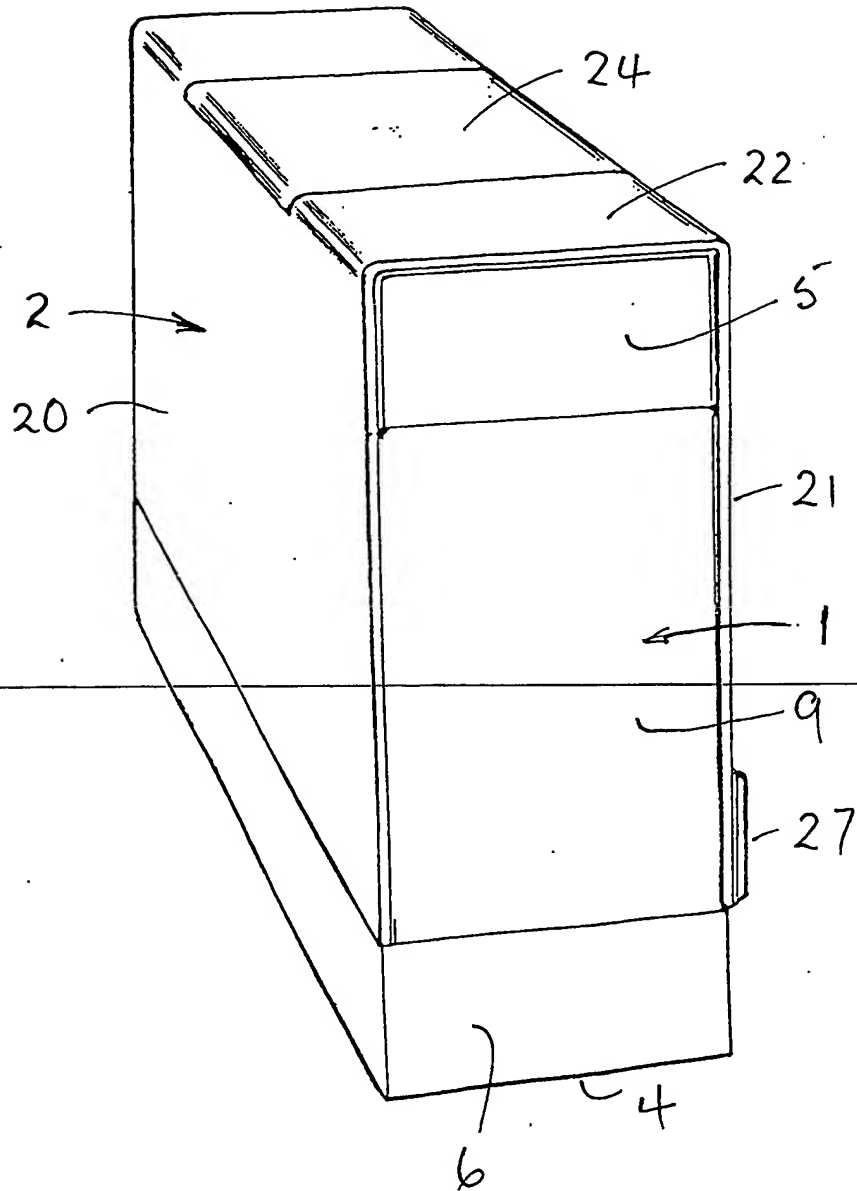


Fig. 1

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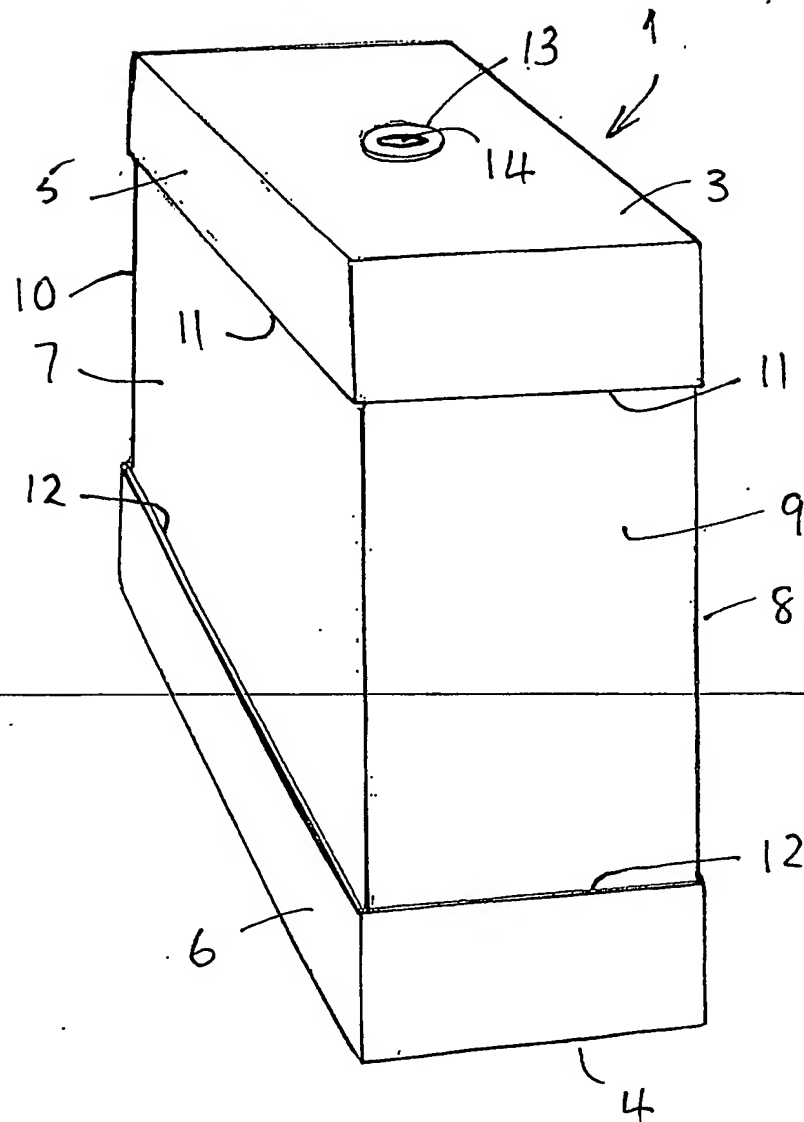


Fig. 2

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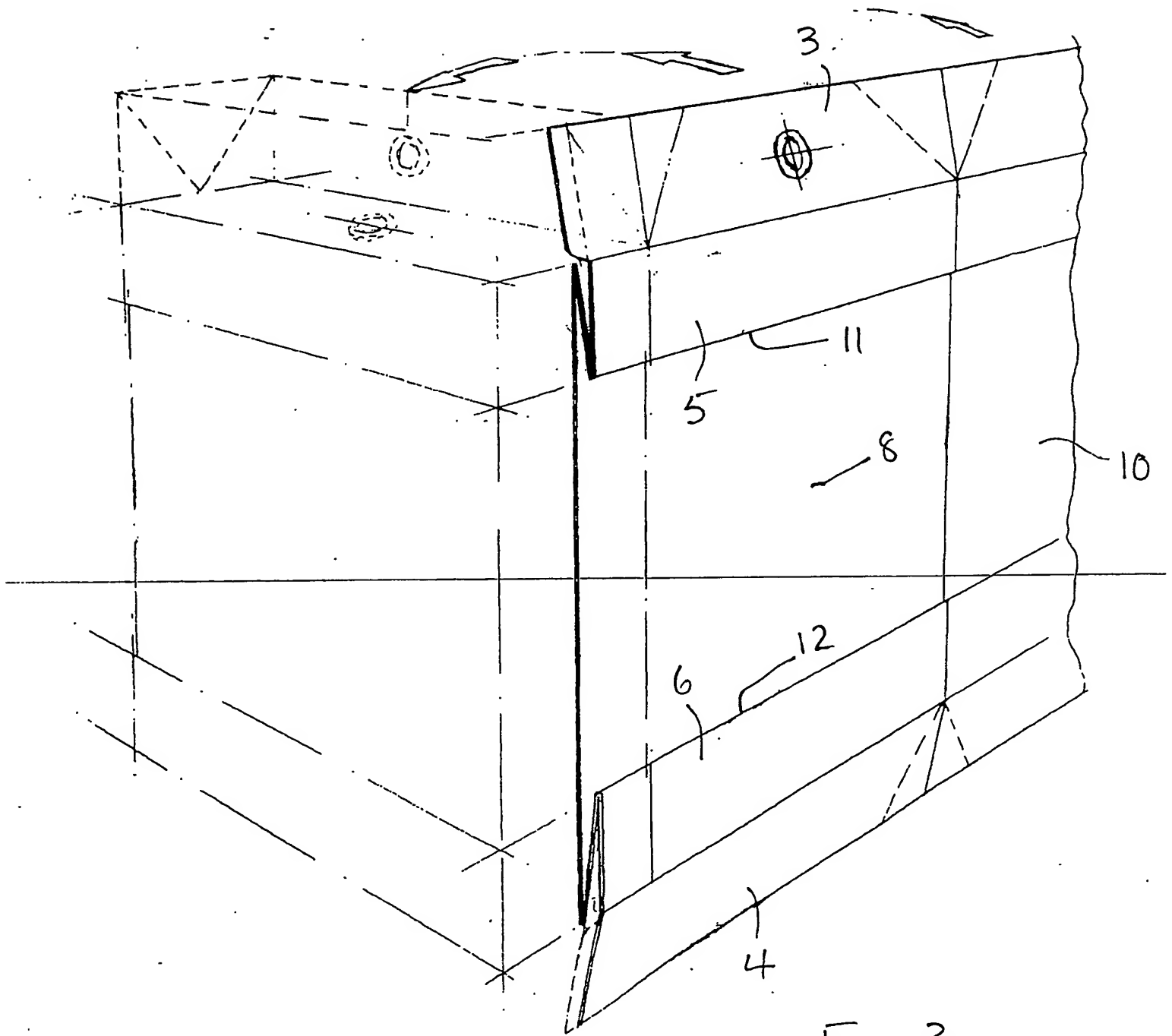


Fig. 3

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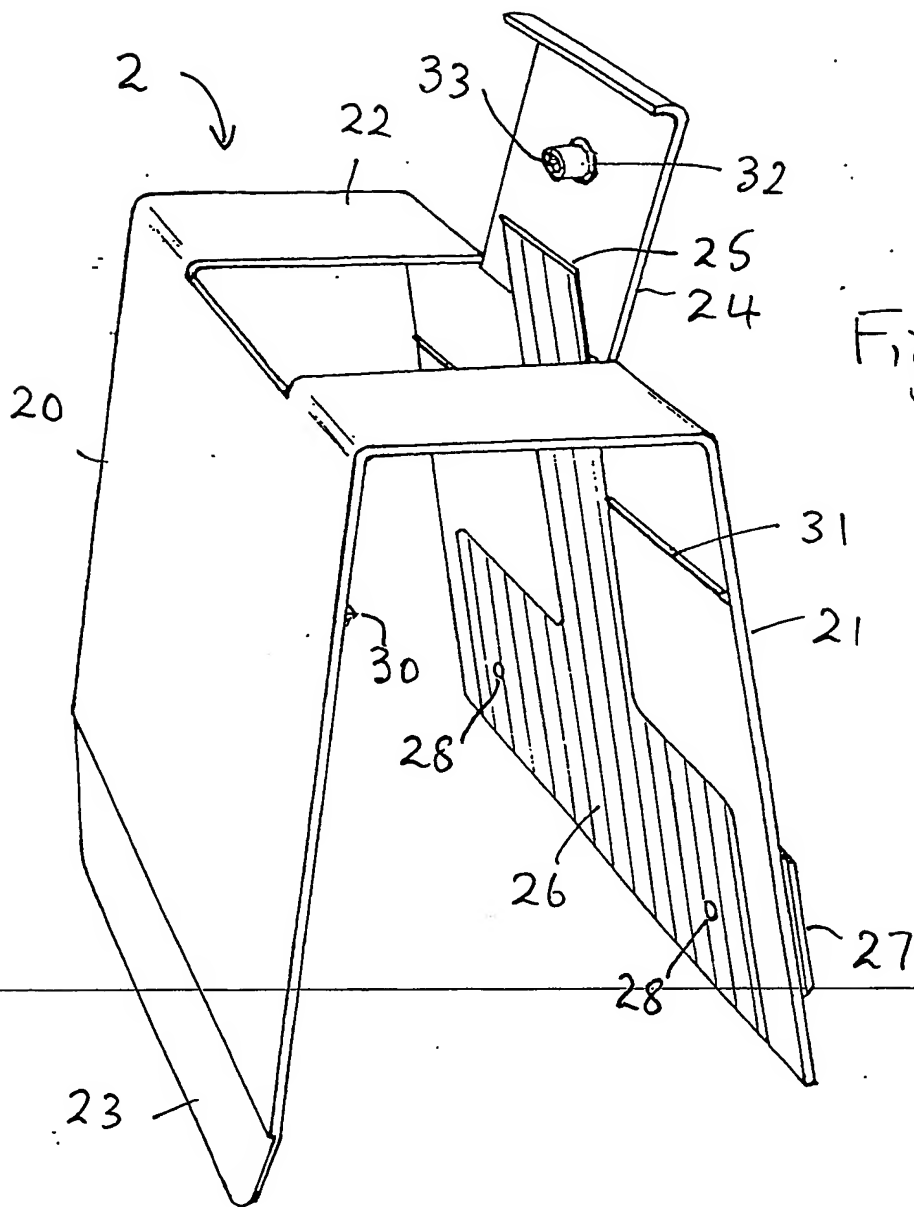
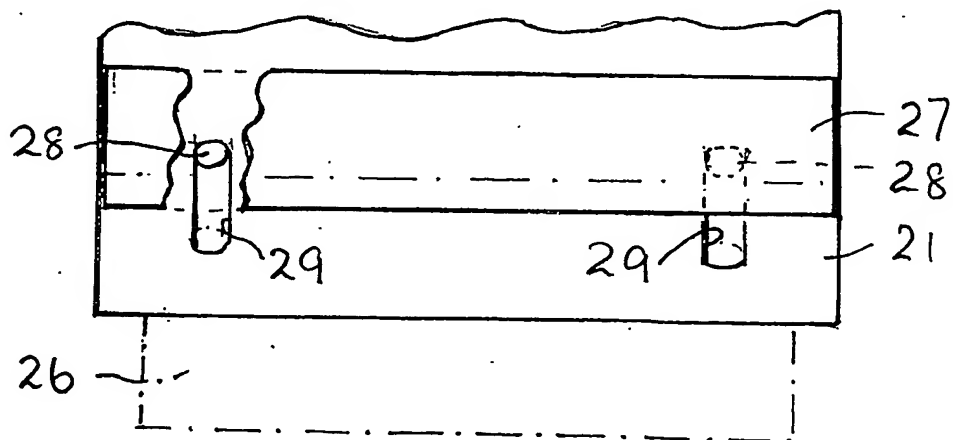


Fig. 4

Fig. 5



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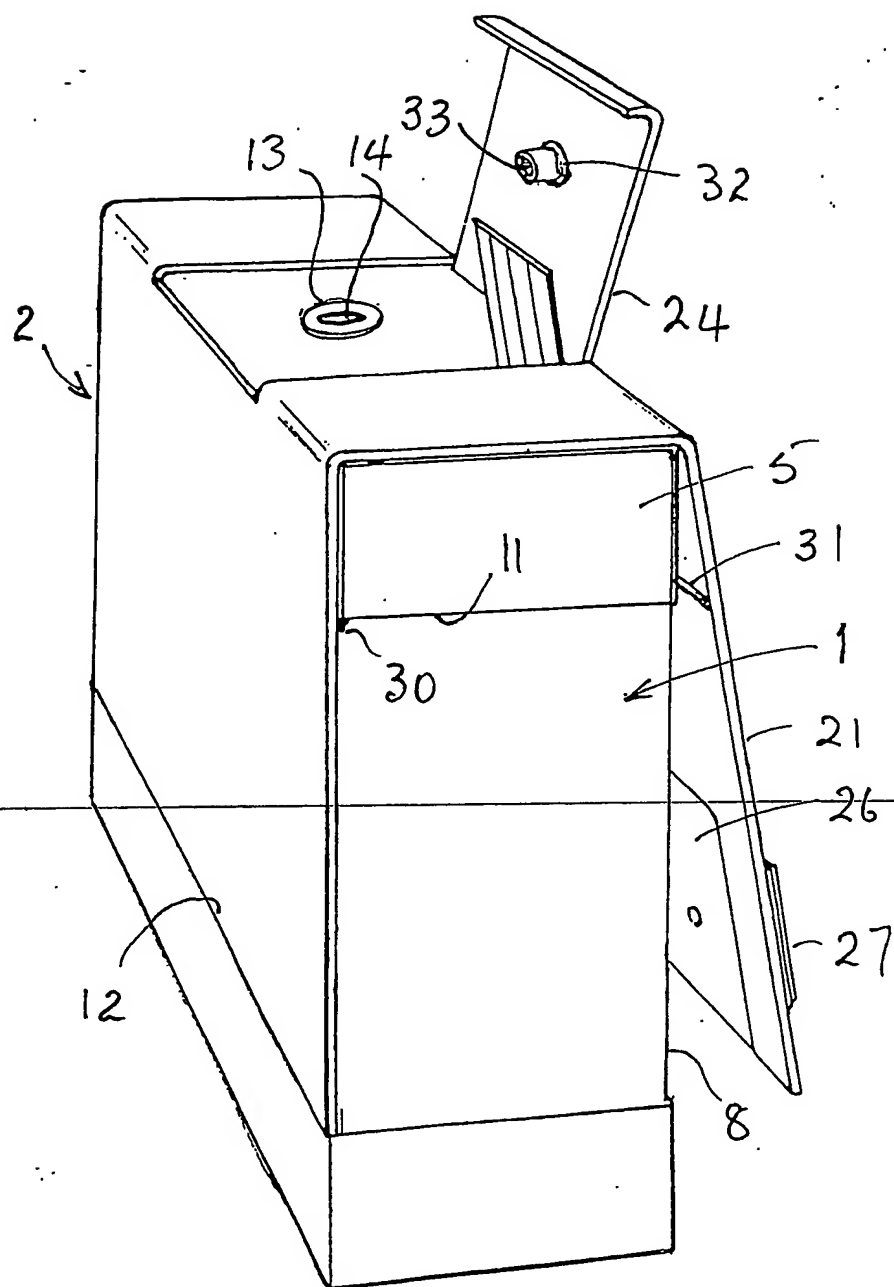


Fig. 6

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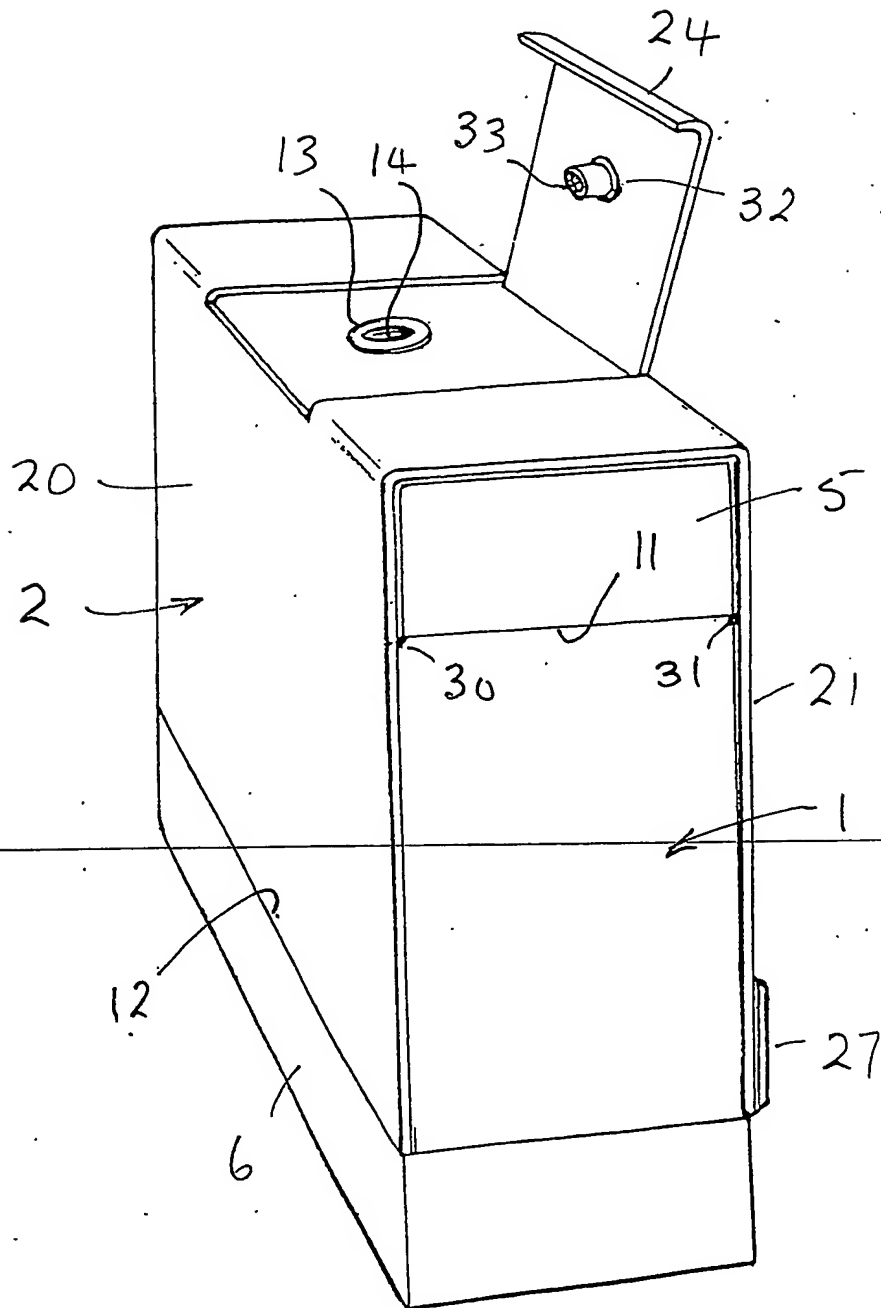


Fig. 7

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